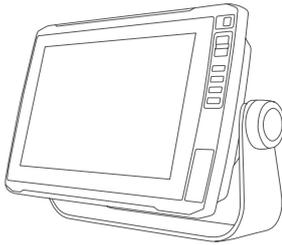# GARMIN.

ECHOMAP™ ULTRA INSTALLATION INSTRUCTIONS

Important Safety Information

⚠ WARNING

See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. In addition, connecting the power cable without the appropriate fuse in place voids the product warranty.

⚠ CAUTION

Always wear safety goggles, ear protection, and a dust mask when drilling, cutting, or sanding.

NOTICE

When drilling or cutting, always check what is on the opposite side of the surface.

To obtain the best performance and to avoid damage to your boat, install the device according to these instructions.

Read all installation instructions before proceeding with the installation. If you experience difficulty during the installation, contact Garmin® Product Support.

Tools Needed

- Drill
- Drill bits
  - Bail mount: drill bits and screws appropriate for the surface and hardware
  - Flush mount: 3.2 mm ($1/8$ in.) and 9.5 mm ($3/8$ in.) drill bits
- #2 Phillips screwdriver
- Jigsaw or rotary tool
- File and sandpaper
- Marine sealant (optional)

Mounting Considerations

You can flush mount the device in the dashboard or bail mount the device on the dashboard.

When selecting a mounting location, observe these considerations.

- The mounting location must provide a clear view of the screen and access to the keys on the device.

- The mounting location must be sturdy enough to support the device and the mount.
- The cables must be long enough to connect the components to each other and to power.
- To avoid interference with a magnetic compass, do not install the device closer to a compass than the compass-safe distance value listed in the product specifications.

Bail Mounting the Device

NOTICE

If you are mounting the bracket on fiberglass with screws, it is recommended to use a countersink bit to drill a clearance counterbore through only the top gel-coat layer. This will help to avoid cracking in the gel-coat layer when the screws are tightened.

1. Select the mounting hardware appropriate for your mounting surface and for the bail-mount bracket.
2. Using the bail-mount bracket ① as a template, mark the pilot holes ②.
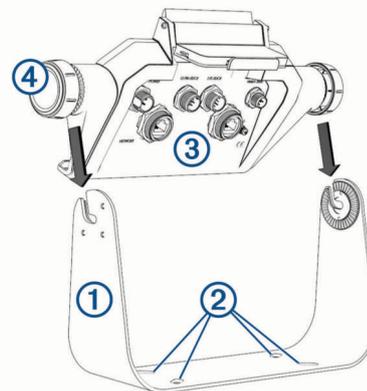
3. Using a drill bit appropriate for the mounting hardware, drill the four pilot holes.
4. Using the selected mounting hardware, secure the bail-mount bracket to the mounting surface.
5. Place the cradle ③ into the bail-mount bracket, and tighten the bail-mount knobs ④.
6. Connect all necessary cables to the cradle (*Connector View*, page 2), and spin the locking rings clockwise to lock the cables to the cradle.

NOTICE

To prevent corrosion of the metal contacts, cover unused connectors with the attached weather caps.

Flush Mounting the Device

NOTICE

Be careful when cutting the hole to flush mount the device. There is only a small amount of clearance between the case and the mounting holes, and cutting the hole too large could compromise the stability of the device after it is mounted.

Using a metal pry tool such as a screwdriver can damage the trim caps and the device. Use a plastic pry tool when possible.

You can mount the device in your dashboard using the flush-mount template and appropriate hardware.

1. Secure the template to the mounting location.

2 Using a 13 mm ($^1/_2$ in.) drill bit, drill one or more of the holes inside the corners of the solid line on the template to prepare the mounting surface for cutting.

3 Using a jigsaw or rotary cutting tool, cut the mounting surface along the inside of the solid line indicated on the template.

4 Place the device into the cutout to test the fit.

5 Use a pry tool, such as a flat piece of plastic or a screwdriver, to carefully pry up the corners of the trim caps, and remove the trim caps.

6 Place the device in the cutout, and ensure the mounting holes on the device line up with the pilot holes on the template.

7 If the mounting holes on the device do not line up with the pilot holes on the template, mark the new hole locations.

8 Using a 3.2 mm ($^1/_8$ in.) drill bit, drill the pilot holes.

9 Remove the template from the mounting surface.

10 Place the device in the cradle (*Installing the Device in the Cradle*, page 3).

11 Install the rubber gasket ① on the back of the device.

The rubber gasket has adhesive on the back. Make sure you remove the protective liner before installing it on the device.
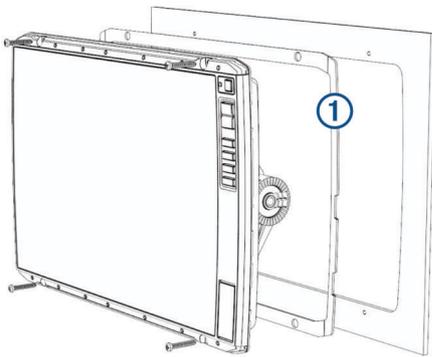
12 Connect all necessary cables (*Connector View*, page 2), and spin the locking rings clockwise to secure the cables to the cradle before placing it into the cutout.
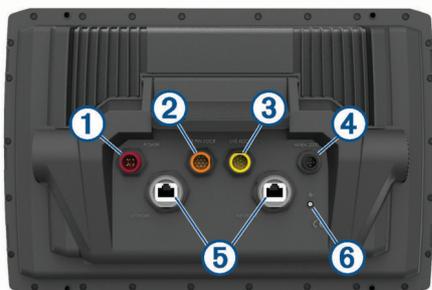
> *NOTICE*
> To prevent corrosion of the metal contacts, cover unused connectors with weather caps.

13 Place the device into the cutout.

14 Secure the device to the mounting surface using the included screws.

15 Install the trim caps by snapping them in place around the edges of the device.

Connection Considerations

After connecting the cables to the cradle, tighten the locking rings to secure each cable.

Connector View

| Item	Label	Description
①	POWER	Power and NMEA® 0183 devices
②	12 PIN XDCR	12-pin transducer
③	LVS XDCR	Panoptix™ LiveScope™ LVS12 12-pin transducer
④	NMEA 2000	NMEA 2000® network
⑤	NETWORK	ECHOMAP network for sonar sharing
⑥	⏚	Ground screw

> *NOTICE*
> To prevent corrosion of the metal contacts, cover unused connectors with weather caps.
>
> To comply with regulations and to reduce noise, snap the ferrite beads on the network and transducer cables, near the connectors.

Power and Data Cable

- The wiring harness connects the device to power and NMEA 0183 devices.
- If you are not connecting NMEA 0183 devices, disregard the blue and brown wires.
- The device has one internal NMEA 0183 port that is used to connect to NMEA 0183 compliant devices.
- If it is necessary to extend the power and ground wires, you must use 1.31 mm^2 (16 AWG) or larger wire.
- If it is necessary to extend the NMEA 0183 or alarm wires, you must use .33 mm^2 (22 AWG) wire.
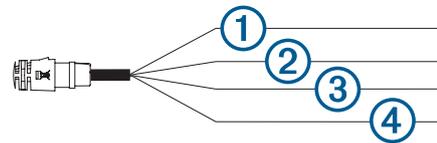
Item	Wire Function	Wire Color
①	NMEA 0183 internal port Rx (in)	Brown
②	NMEA 0183 internal port Tx (out)	Blue
③	Ground (power and NMEA 0183)	Black
④	Power	Red

Connecting to Power

> ⚠ **WARNING**
> When connecting the power cable, do not remove the in-line fuse holder. To prevent the possibility of injury or product damage caused by fire or overheating, the appropriate fuse must be in place as indicated in the product specifications. In addition, connecting the power cable without the appropriate fuse in place voids the product warranty.

You should connect the red wire to the same battery through the ignition or another manual switch to turn the device on and off.

1 Route the power cable between the power source and the device.

2 Connect the red power wire to the ignition or another manual switch, and connect the switch to the positive (+) battery terminal if necessary.

3 Connect the black wire to the negative (-) battery terminal or to ground.

4 Connect the power cable to the device, and turn the locking ring clockwise to tighten it.

Connecting the Device to a Transducer

Go to garmin.com/transducers or contact your local Garmin dealer to determine the appropriate type of transducer for your needs.

1 Follow the instructions provided with your transducer to correctly install it on your boat.
2 Route the transducer cable to the back of your device, away from sources of electrical interference.
3 Connect the transducer cable to the appropriate port on the cradle.

NMEA 2000 Considerations

If you are connecting to an **existing** NMEA 2000 network, identify the NMEA 2000 power cable. Only one NMEA 2000 power cable is required for the NMEA 2000 network to operate properly.

A NMEA 2000 Power Isolator (010-11580-00) should be used in installations where the existing NMEA 2000 network manufacturer is unknown.

If you are installing a NMEA 2000 power cable, you must connect it to the boat ignition switch or through another in-line switch. NMEA 2000 devices will drain your battery if the NMEA 2000 power cable is connected to the battery directly.

You can connect your device to a NMEA 2000 network on your boat to share data from NMEA 2000 compatible devices such as sensors or a VHF radio. The necessary NMEA 2000 cables and connectors are sold separately.

If you are unfamiliar with NMEA 2000, you should read the "NMEA 2000 Network Fundamentals" chapter of the *Technical Reference for NMEA 2000 Products*. You can find this document using the "Manuals" link on the product page for your device at garmin.com.

The port labeled NMEA 2000 on the cradle is used to connect it to a standard NMEA 2000 network.
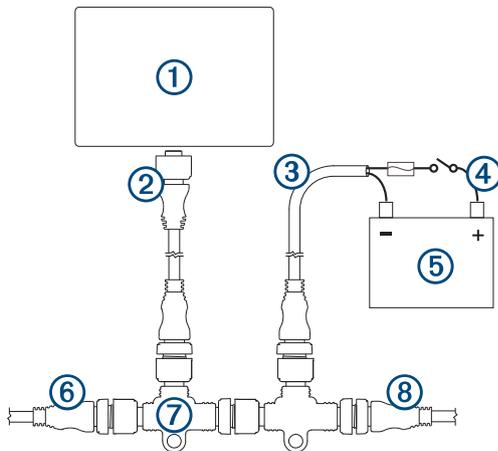
Item	Description
①	ECHOMAP Ultra device
②	NMEA 2000 drop cable
③	NMEA 2000 power cable
④	Ignition or in-line switch
⑤	12 Vdc power source
⑥	NMEA 2000 terminator or backbone cable
⑦	NMEA 2000 T-connector
⑧	NMEA 2000 terminator or backbone cable

Installing the Device in the Cradle

After the cables are connected to the cradle, you can quickly place the device in the cradle.
1 Press the button on the release lever and lift the lever to unlock it.

2 Place the base of the device in the bottom of the cradle.
3 Lift the lever.
4 Tilt the top of the device toward the cradle.
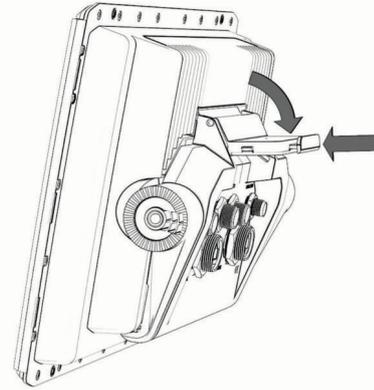
5 Press the button on the lever, and push the lever down until the device clicks in place.

Removing the Device from the Cradle
1 Press the button on the release lever on the cradle, and pull the lever up.
2 Tilt the device forward, and lift the device out of the cradle.

Specifications

All Models

Material	Polycarbonate plastic
Water rating	IEC 60529 IPX7[1]
Temperature range	From -15° to 55°C (from 5° to 131°F)
Compass-safe distance	65 cm (25.6 in.)
Clearance to nearest obstruction	150 mm (6 in.)
Input voltage	From 9 to 18 Vdc
Fuse	8 A
NMEA 2000 LEN @ 9 Vdc	1
NMEA 2000 draw	39 mA max.
Memory card	2 microSD® card slots; 32 GB max. card size

10-Inch Models

Dimensions (W x H x D)	29.5 x 19.5 x 9.8 cm (11.6 x 7.7 x 3.9 in.)
Display size (W x H)	21.7 x 13.6 cm (8.5 x 5.4 in.) 25.4 cm (10 in.) diagonal
Weight	1.8 kg (4.1 lb.)
Max. power draw	34 W
Typical current draw at 12 Vdc (RMS)	2.8 A
Max. current draw at 12 Vdc (RMS)	3 A
Wireless frequencies and protocols	2.4 GHz @ 17.2 dBm nominal

12-Inch Models

Dimensions (W x H x D)	34.1 x 22.9 x 9.8 cm (13.4 x 9.0 x 3.9 in.)
Display size (W x H)	26.1 x 16.3 cm (10.3 x 6.4 in.) 30.7 cm (12.1 in.) diagonal
Weight	2.5 kg (5.5 lb.)
Max. power draw	34 W

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[1] The device withstands incidental exposure to water of up to 1 m for up to 30 min. For more information, go to www.garmin.com/waterrating.

Typical current draw at 12 Vdc (RMS)	3 A
Max. current draw at 12 Vdc (RMS)	3.3 A
Wireless frequencies and protocols	2.4 GHz @ 18.5 dBm nominal

NMEA 2000 PGN Information

Transmit and Receive

PGN	Description
059392	ISO acknowledgment
059904	ISO request
060928	ISO address claim
126208	NMEA: Command, request, and acknowledge group function
126996	Product information
127250	Vessel heading
128259	Speed: Water referenced
128267	Water depth
129539	GNSS DOPs
129799	Radio frequency, mode, and power
130306	Wind data
130312	Temperature

Transmit

PGN	Description
126464	Transmit and receive PGN list group function
127258	Magnetic Variance
129025	Position: Rapid update
129026	COG and SOG: Rapid update
129029	GNSS position data
129283	Cross track error
129284	Navigation data
129285	Navigation route and waypoint info
129540	GNSS satellites in view

Receive

PGN	Description
127245	Rudder
127250	Vessel heading
127488	Engine parameters: Rapid update
127489	Engine parameters: Dynamic
127493	Transmission parameters: Dynamic
127498	Engine parameters: Static
127505	Fluid level
129038	AIS class A position report
129039	AIS class B position report
129040	AIS class B extended position report
129794	AIS class A static and voyage related data
129798	AIS SAR aircraft position report
128000	Nautical leeway angle
129802	AIS safety-related broadcast message
129808	DSC call information
130310	Environmental parameters
130311	Environmental parameters (obsolete)
130313	Humidity
130314	Actual pressure
130576	Small craft status